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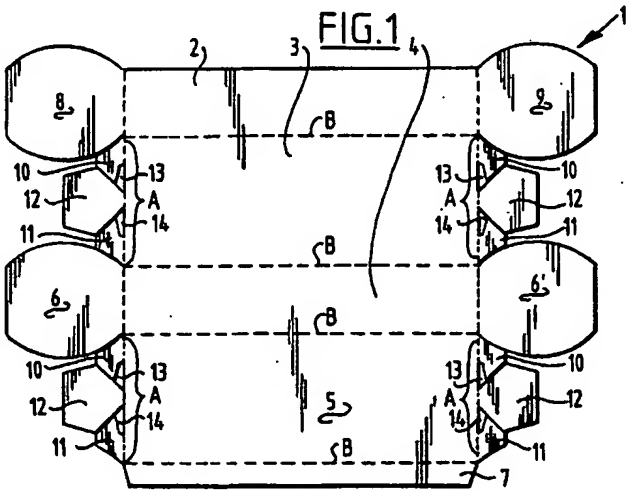
(54) Blank for a box with at least one curved wall

(57) The invention relates to a blank with main (2-6) and auxiliary surfaces (10,11,12), which main surfaces form the walls of the corresponding box, wherein the main surfaces are mutually separated from the auxiliary surfaces by substantially straight folding edges (A) and wherein at least one main surface is adapted as a curving main surface (3,5) which defines a curved outer wall in the corresponding box, wherein at least one folding edge (A) of the curving main surface (3,5) of the blank is coupled to at least one curving auxiliary surface (10,11,12).

The invention also relates to a box formed by the blank according to the invention.

FIG.1



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Description

The invention relates to a blank as according to the preamble of claim 1.

Such a blank is known from DE-U-9318467 and DE-U-9002504.

The curving main surfaces of such a known blank are bounded by at least two cut edges which in the corresponding box formed by the blank connect poorly to the adjoining main end surfaces.

In the blank according to DE-U-9002504 a connection is obtained by means of other auxiliary lips and complicated auxiliary constructions.

The invention has for its object to cause the curved wall of the corresponding box to connect well onto the end walls and provides for this purpose a blank as according to claim 1.

The end walls of the blank according to GB-A-773138 connect onto the curving surfaces although these end surfaces are separated from the main surfaces by means of curved folding edges, which causes drawbacks in respect of the available volume and the stackability of boxes obtained with this blank.

The blank according to the invention preferably has at least two, and more preferably at least three, curving auxiliary surfaces located at a mutual distance on at least one and preferably two folding edge(s) of one and preferably two curving main surface(s). The number and shape of the curving auxiliary surfaces of a blank according to the invention will depend on the desired curve of the curving wall and on the desired closure of the curving wall relative to the end wall.

The invention is further elucidated with reference to the following figure description of a number of preferred embodiments of the invention.

In the drawings:

figures 1 and 2 show preferred embodiments of a blank according to the invention in top view;

figures 3 and 4 show perspective views of the box obtained from the respective blanks shown in figures 1 and 2 via folding and, if necessary, fixing operations.

A preferred embodiment of a blank 1 according to the invention has two flat main surfaces 2, 4; two curving main surfaces 3, 5; two end main surfaces 6, 6'. These main surfaces 2, 4, 3, 5, 6, 6' of the blank form the walls of the corresponding box shown in figure 3.

The curving main surface 3, 5 is coupled at a folding edge A to a number of curving auxiliary surfaces 10, 11, 12. Each curving surface 3, 5 preferably has two opposite folding edges A which are each provided with a number of, and preferably three, curving auxiliary surfaces 10, 11, 12. A space 13, 14 is provided between the curving auxiliary surfaces, which space is bounded by a cut edge. The curving auxiliary surfaces 10, 11, 12 are positioned in a mirror-symmetrical pattern relative to the middle of folding edge A of curving main surface(s) 3, 5.

The curving auxiliary surfaces 12 are of a larger dimension than the other curving auxiliary surfaces 10, 11. The size and shape of curving auxiliary surface 12 are chosen such that in the formed corresponding box (figure 3, 4) they lie against each other in the same plane.

The curving main surface 5 is coupled along the full length to a peripheral auxiliary surface 7. Blank 1 comprises two auxiliary end surfaces 8 and 9 which preferably have the same dimension and the same shape as the main end surfaces 6, 6'. In the corresponding box (figure 3) a curving auxiliary surface 12 will be received on each box end between an auxiliary end surface 8, 9 and a main end surface 6, 6', which main end surface 6, 6' forms the outer end wall.

Another embodiment of a blank 17 has auxiliary end surfaces 15, 16 with a shape differing slightly from main end surfaces 6, 6', from which the corresponding box is shown in figure 4 and which box has the same shape and dimension as the box of figure 3.

In order to form the box the blank 1, 17 is first folded along folding edges B, whereafter the auxiliary surface 7 is fixed to the main surface 2 of the blank, for instance by gluing to form a flat wall 20, thereby obtaining a tube. The curving auxiliary surfaces 10, 11 are then folded inward on which the auxiliary end surfaces 8, 9 respectively 15, 16 are placed, whereafter the curving auxiliary surfaces 12 are folded thereover and whereafter finally the main end surfaces 6, 6' are placed on the already folded-up assembly to form the end wall 18, 21. The curvature of a cut edge of the end wall corresponds with the curvature of the curving wall 19. The end wall 18, 21 also connects well onto the other walls of the box. All parts are preferably mutually adhered by means of an adhesive such as glue. The curving surface is held in its curved position in that a curving auxiliary surface 12 is enclosed between an auxiliary end surface and a main end surface and also in that the curving auxiliary surfaces 10, 11 are arranged relative to curving auxiliary surface 12 in interwoven manner between the auxiliary end surface.

With the exception of auxiliary end surfaces 15, 16, the end wall 21 of the box in figure 4 is the same as in the embodiment of figure 3.

Assembly of a box formed by a blank according to the invention can be formed in other manner, in particular with another folding sequence.

The curving auxiliary surfaces 10, 11, 12 can differ in number and shape from the above illustrated preferred embodiments.

Claims

1. Blank with main and auxiliary surfaces, which main surfaces forms the walls of the corresponding box, wherein the main surfaces are mutually separated from the auxiliary surfaces by substantially straight folding edges and wherein at least one main sur-

face is adapted as a curving main surface which defines a curved outer wall in the corresponding box, **characterized in that** at least one folding edge of the curving main surface of the blank is coupled to at least one curving auxiliary surface.

2. Blank as claimed in claim 1, **characterized in that** the folding edge of the curving main surface of the blank is coupled to at least two curving auxiliary surfaces located at a mutual distance.

3. Blank as claimed in claim 1 or 2, **characterized in that** the folding edge of the curving main surface of the blank is coupled to three curving auxiliary surfaces located at a mutual distance.

4. Blank as claimed in claim 1, 2 or 3, **characterized in that** the curving auxiliary surfaces on the folding edge of the curving main surface are positioned in a mirror-symmetrical pattern relative to the middle of folding edge.

5. Blank as claimed in claim 1, 2, 3 or 4, **characterized in that** the curving main surface is provided with two mutually opposite folding edges, wherein each folding edge is coupled to at least one curving auxiliary surface, to preferably two and more preferably three curving auxiliary surfaces which are located at a mutual distance and which are preferably ordered in a mirror-symmetrical pattern relative to the middle of each folding edge.

6. Blank as claimed in claim 5, **characterized in that** the blank comprises six main surfaces: two curving main surfaces, two flat main surfaces and two main end surfaces forming the substantially flat end walls of the box.

7. Blank as claimed in claim 6, **characterized in that** the main end surfaces are each provided with two curved cut edges, the curvature of which is substantially the same as the curvature of the curving main surface of the box.

8. Blank as claimed in claim 6 or 7, **characterized by** two auxiliary end surfaces having substantially the same dimension and shape as the main end surfaces.

9. Blank as claimed in any of the foregoing claims 1-8, **characterized in that** one curving surface is coupled to a peripheral auxiliary surface along substantially the full length of a folding edge.

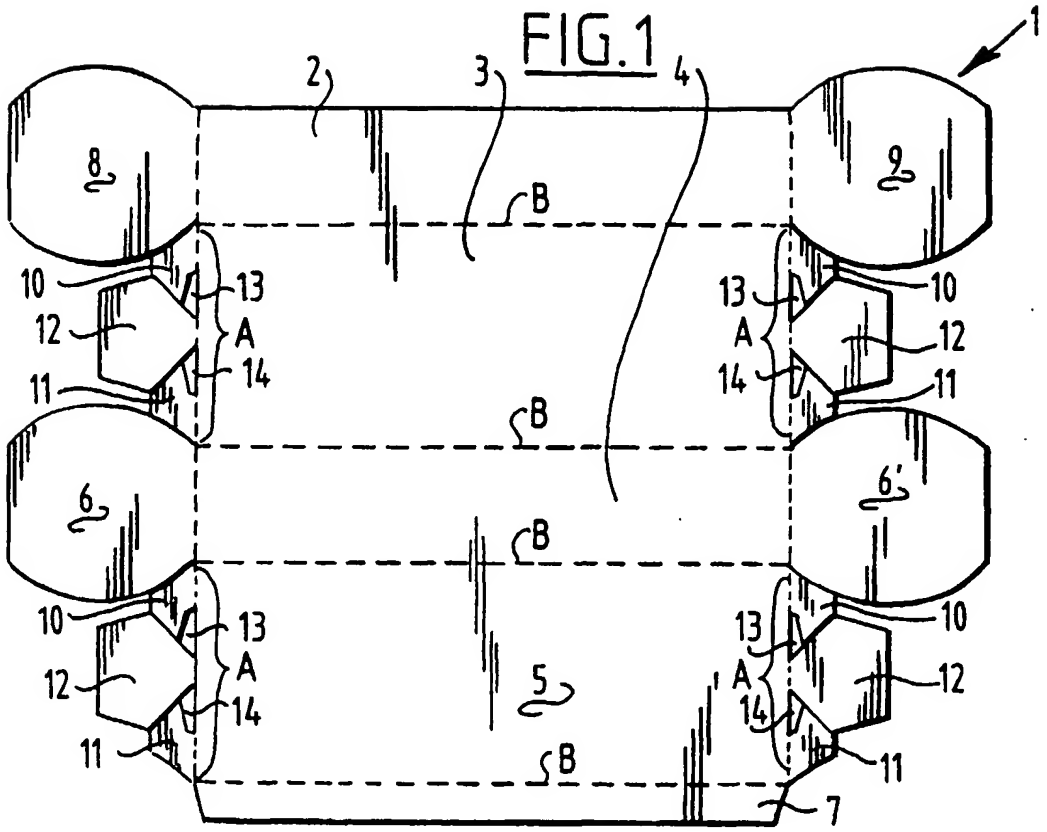
10. Box formed by the blank as claimed in claims 1-9.

11. Box as claimed in claim 10, **characterized in that** at least one curving auxiliary surface is enclosed between a main end surface and an auxiliary end surface.

12. Box as claimed in claim 10 or 11, **characterized in that** the curving main surface is held in curved position by at least one curving auxiliary surface.

13. Box as claimed in at least one of the claims 10-12, **characterized in that** at least one curving main surface is fixed to at least one auxiliary end surface.

FIG.1



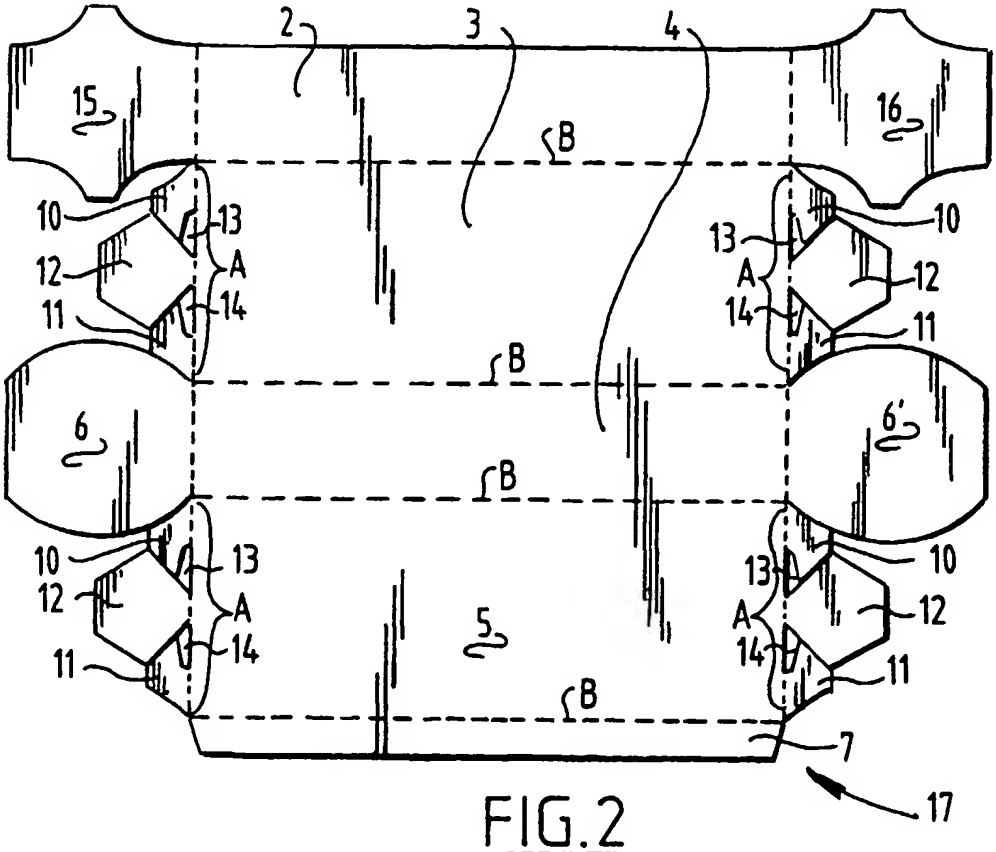


FIG.2

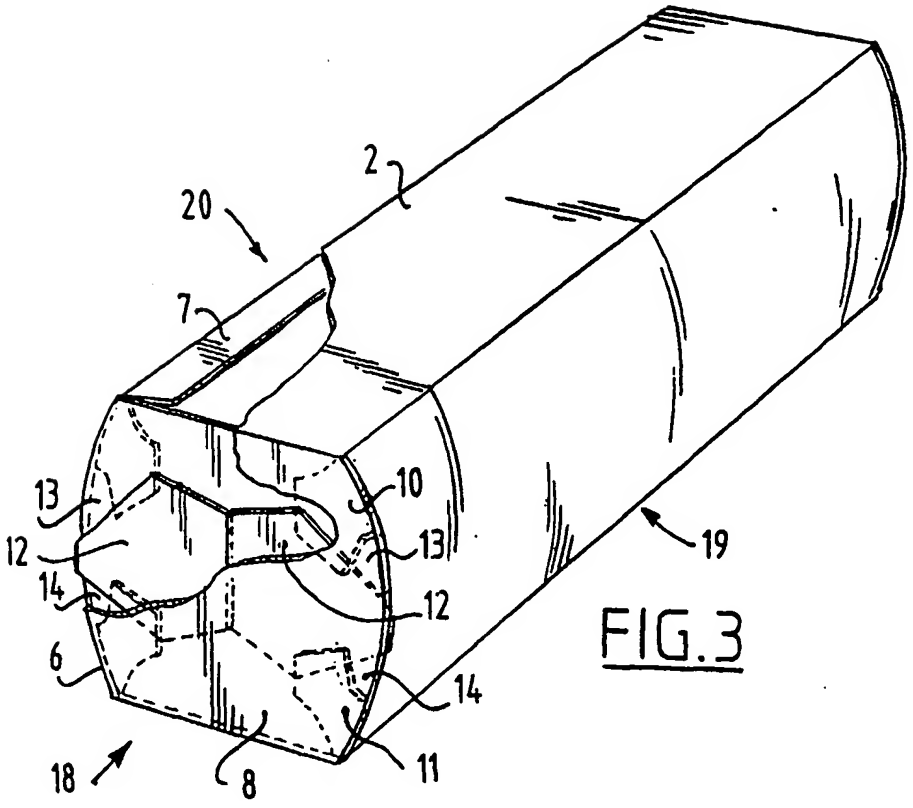


FIG.3

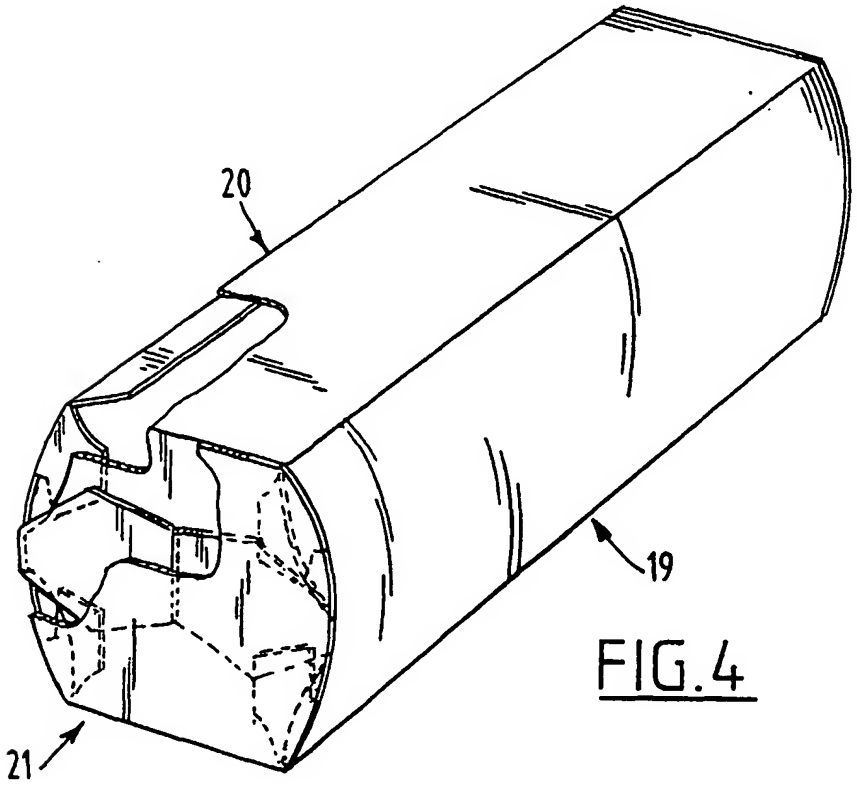


FIG.4

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EUROPEAN SEARCH REPORT

Application Number
EP 97 20 1848

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X Y	GB 773 138 A (FIELD SONS & CO.) 24 April 1957 * the whole document * ---	1,6,7,11 2,3,9,10	B65D5/02
Y X	EP 0 626 317 A (C. P. BIANCHI S.P.A.) 30 November 1994 * column 5, line 38 - column 6, line 25; figures 6,12 * ---	2,3,9,10 12-14	
A,D	DE 90 02 504 U (A.LANDERER GMBH) 3 May 1990 * the whole document * ---	1-14	
A,D	DE 93 18 467 U (MAX KETTNER GMBH) 10 March 1994 * the whole document * -----	1-14	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	17 September 1997	Pernice, C

CATEGORY OF CITED DOCUMENTS

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